



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,012	01/15/2004	Takayuki Sugahara	KYO.P0025	8675

7590 07/31/2007
RENNER, KENNER, GREIVE, BOBAK,
TAYLOR & WEBER
Fourth Floor, First National Tower
Akron, OH 44308-1456

EXAMINER

SHIKHMAN, MAX

ART UNIT	PAPER NUMBER
----------	--------------

2624

MAIL DATE	DELIVERY MODE
-----------	---------------

07/31/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/760,012	Applicant(s) SUGAHARA ET AL.	
	Examiner Max Shikhman	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*; 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>09/08/2005 and 04/08/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicants' response to the last Office Action, filed 05/18/2007 has been entered and made of record.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1,3,5 are rejected under 35 U.S.C. 102(b) as being anticipated by Cox, "Field-based watermark insertion and detection" US-PAT-NO: 5991426.

() Regarding Claims 1,3,5:

computer (Col7 line 35, "software...computer")

An apparatus for embedding (Fig 1: 100) imperceptible codes (watermark) into digital image data comprising: a data divider to divide (104), per frame, digital image data into an "N" number of fields (N=2, Abstract: "two image fields") wherein "N" being an integer of 2 or more;

a code producer to produce an N/m

(N=m=2. N/m=1. Abstract: "positive watermark into a first field and a negative watermark into a second field." Col6 line 22: W,-W)

Art Unit: 2624

number of combinations of imperceptible codes, each combination having an "m" number of imperceptible codes given by a function $(-1, \text{ since } W^-1=-W)$, an inverse of a specific function that gives a specific identification code by using the "m" number of imperceptible codes as variables $(W/-W=-1)$ wherein "m" being an integer of 2 or more and given by dividing "N" by an integer $(N/1=m)$; and*

a code embedder (Abstract: "watermark is inserted") to embed the N/m number of combinations of imperceptible codes into image data divided into the "N" number of fields so that the "m" number of imperceptible codes of each combination are embedded into image data in the "m" number of fields according to a specific rule of positional correspondence

(Abstract: "two fields can be interlaced fields of a field-based video signal or alternate rows of a frame-based video signal". Two interlaced fields compose one frame.)

to give correlation $(W, -W)$ are correlated) among the "m" number of fields in the "N" number of fields of one frame.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2,4,6 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Cox, "Field-based watermark insertion and detection" US-PAT-NO: 5991426 in view of

Sugahara, "Method and apparatus for embedding and reproducing watermark into and from contents data", US-PAT-NO: 7174030.

() Regarding Claims 2,4,6:

computer (Cox. Col7 line 35, "software...computer")

Cox discloses, An apparatus for extracting (210. Figs 4-6) imperceptible codes (watermark) from digital image data comprising: a data divider to divide (104), per frame, input digital image data into an "N" number of fields (N=2, Abstract: "two image fields")

wherein "N" being an integer of 2 or more according to a specific rule of positional correspondence (Abstract: "two fields can be interlaced fields of a field-based video signal or alternate rows of a frame-based video signal". Two interlaced fields compose one frame.)

to give correlation (W,-W are correlated. Col 3 line 10, "two fields are highly correlated") among an "m" number of fields in the "N" number of fields of one frame wherein "m" being an integer of 2 or more and given by dividing "N" by an integer ($N/1=m$), the input digital image data carrying imperceptible codes that have been embedded into the input digital image data by dividing (Fig 1: 104), per frame, original digital image data into the "N" number of fields, producing an N/m ($N=m=2$. $N/m=1$. Abstract: "positive watermark into a first field and a negative watermark into a second field." Col6 line 22: W,-W)

number of combinations of imperceptible codes (W,-W), each combination having the "m" number of imperceptible codes given by a function (-1, since $W-1=-W$), an inverse of a specific function that gives a specific identification code by using the "m"*

Art Unit: 2624

number of imperceptible codes as variables ($W/-W=-1$), and embedding (Fig 1: 110,112.

Abstract: "watermark is inserted") the N/m number of combinations of imperceptible codes into image data divided into the " N " number of fields ($N=2$, Abstract: "two image fields") according to a specific code embedding technique ($N=m=2$. $N/m=1$. Abstract: "positive watermark into a first field and a negative watermark into a second field." Col6 line 22: $W, -W$) so that the " m " number of imperceptible codes of each combination are embedded into image data in the " m " number of fields according to the rule of positional correspondence;

(Abstract: "two fields can be interlaced fields of a field-based video signal or alternate rows of a frame-based video signal". Two interlaced fields compose one frame.)

a code extractor (Figs 4-6. 210) to extract the imperceptible codes embedded into the image data divided into the " N " number of fields according to a code extraction technique corresponding [$W-(-W)=2W$] to the code embedding technique;

(Col3 lines 11-16, "when one watermarked field is subtracted from the other watermarked field... The result is a large watermark signal with only a very small contribution from the image data." Col6 line 51.)

a code-pair combiner [$W-(-W)=2W$] to combine (Col3 lines 11-16, "when one watermarked field is subtracted from the other watermarked field... The result is a large watermark signal with only a very small contribution from the image data." Col6 line

51.) *the extracted (Fig4: 210) imperceptible codes, into the N/m ($N/m=1$) number of combinations according to the rule of positional correspondence;*

(Abstract: "two fields can be interlaced fields of a field-based video signal or alternate rows of a frame-based video signal". Two interlaced fields compose one frame.)

a code operator to execute the specific function to conduct a specific operation (subtract) by using the imperceptible codes of each of the N/m number of combinations as variables $[W-(-W)=2W]$; (Col3 lines 11-16, "when one watermarked field is subtracted from the other watermarked field... The result is a large watermark signal with only a very small contribution from the image data." Col6 line 51.) and

Cox discloses everything as described above except, a determiner to determine that the input digital image data has not been tampered with only when results of the specific operation is equal to specific identification code for all of the N/m number of combinations.

Sugahara, in an analogous environment, teaches, a determiner (Col 13 line 16, "22 further includes a deciding section") to determine that the input digital image data has not been tampered with only when results of the specific operation is equal to specific identification code (specified bit pattern) for all of the N/m number of combinations.

(Col 21 line 55. Col 13 line 22, "When the bit pattern represented by the operation-result data is equal to the specified bit pattern, the deciding section determines that the operation-resultant data have a watermark fragment".)

Art Unit: 2624

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Sugahara's method in Cox in order to decide whether or not the watermark corresponds to the "specified bit pattern". This helps in watermark authentication.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Numao, "System and method for hiding and extracting message data in multimedia data" US 6055321 A.

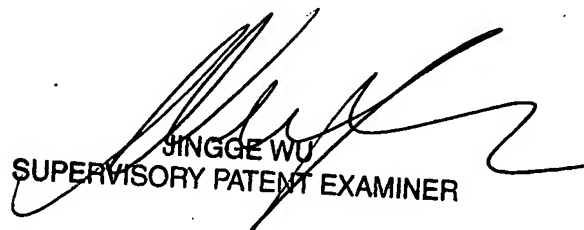
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Max Shikhman whose telephone number is (571) 270-1669; FAX is 571-270-2669. The examiner can normally be reached on Monday-Friday 8:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JINGGE WU can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2624

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Max Shikhman
7/22/2007



JINGGE WU
SUPERVISORY PATENT EXAMINER